

# LONG LAYING GRASS LEYS



Harrow



Cutting a grass ley.



A long finger harrow sowing seed into a growing grass ley.

## WHY LONG LAYING GRASS LEYS?

Bare soil from arable field causes run-off of nitrogen and phosphorus. Soil covered with vegetation reduces the run off with about 50 %. The longer time the soil is covered by vegetation the less nutrient run-off. Still, it is common that arable fields used for production of winter fodder for livestock is plowed every fourth year. If it is possible to prolong the rotation the run-off is decreased. By prolonging the plowing with one year there will be a 20% reduction of the run-off, with two years a 33% reduction and so on. Flowering herbs in the grass leys are also a very valuable nectar resource for insects, especially bees and butterflies.

There are various ways to prolong the rotation. One is to restart the process by plowing, harrowing and then sowing the field with long lasting species. Another way is to improve the ley by sowing new seeds in growing vegetation.

## PLANNING

To be successful with long laying grass leys a strategy must be worked out. It is important to plan far ahead for the following season.

**Preparing the soil.** Sometimes it is necessary to start the establishment with bare soil, e.g. when the ley is destroyed by driving, bushes have invaded the field or old vegetation with powerful roots or lots of weeds. In these cases the field has to be plowed, harrowed and the topsoil evened out. Some times it will be necessary to lay the field fallow. Sowing can be done with oats together with grass and herbs. The first year the oat can be harvested green. 15-24 kg/ha of a seed mixture should be used depending on climate and soil.

**Sowing in a growing grass ley.** Improve the ley after the first harvest of the year, so that the seeds have a long period for establishment. After the harvest the vegetation is short and the seeds will come in direct contact with the topsoil. Sowing should be done when the soil is moist or wet, or before a coming rain. The amount of seeds should be about 16 kg/ha. The composition of the seed mixture is dependent on the soil and climate conditions.

**Fertilizing with manure.** Solid manure should be spread in the autumn, after the last harvest, with a vertical muck spreader. The following spring the field is harrowed with e.g. a long finger harrow together with sowing, if needed. Finally the surface needs rolling to even it out.



Detail of a long finger harrow.



Seeds are blown out of the pipe on a long finger harrow.



## GRASS AND HERB SPECIES

It is a very big difference between farming cereals and farming grass and herbs for production of winter fodder. Cereals have been used in farming for thousands of years, but production on grass leys have been used less than two hundred years with species that are still wild. Therefore their genetic variation is much broader.

All species have various strains with different characteristics.

Seed species, strains and mixtures should be chosen depending on the soil quality and climate. Some times it can be good to start with a wide spectrum of species and different strains and see which are most successful. Then use these.

**TALL FESCUE**, *Festuca arundinacea*, started to be popular about 1945. It is long lasting and hardy against draught and moisture. It needs a lot of nutrients and grows mostly on clay soil. The growth maximum is late in the growing period.

**PERENNIAL RYEGRASS**, *Lolium perenne*, is hardy against wear. It is established fast and aggressive.

**COCK'S FOOT/ORCHARD GRASS**, *Dactylis glomerata*, is hardy against winter damages and draught.

**CANARYGRASS**, *Phalaris arundinacea*, is hardy against draught and moisture. It can be used instead of straw for bedding in the cow house. It can be used as fodder for cows, if these are not growing animals. Canarygrass is grown on organic soils.

**RED CLOVER**, *Trifolium pretense*, is a very common species in seed mixtures for grass leys. It is not recommend for long lying leys as it only lasts for about three years. Red clover is very hard to dry. During humid conditions it takes 3-4 days.

**LUCERNE/ALFALFA**, *Medicago sativa*, usually crossbreeds with **YELLOW LUCERNE**, *Medicago falcata*, and vice versa. One common variety of yellow lucerne originates from Estonia. It has deep roots, is hardy against draught and grows very well on well drained soils. Both of the lucerne species can give up to three harvests depending on where they grow. One of the harvests must be left to bloom. Both these species have to be incubated with bacteria before seeding. Growing lucerne needs some knowledge to be successful.

**BIRD'S-FOOT TREFOIL**, *Lotus corniculatus*, has deep roots and is hardy against draught and high temperatures. It does not need a lot of nutrients and are adapted to long laying leys. The quality of the proteins is very high and the water content of the fodder is relatively low.

**CHICORY**, *Cichorium intybus*, **NARROW LEAF PLANTAIN** *Plantago lanceolata* and **CARAWAY** *Carum carvi* are all deep rooted species that are suitable for long laying grass leys.

## LONG LYING GRASS LEYS COMPARED WITH 4 YEAR ROTATION (PLOWING EVERY FORTH YEAR)

The costs include plowing, harrowing, seeding, rolling, seeds, reseeding and seeds for reseeding. (Costs, Sweden, 2010).

Costs /ha and yr €	Cost/4 yr	Cost/5 yr	Cost/6 yr	Cost/8 yr
Long lying leys	85-93	85-92	73-79	58-62
Rotation 4 yr	85-93	85-93	85-93	85-93

The costs will decrease the longer the time period between rotations of the grass ley.

Still, sometime it will be necessary to start from the beginning depending non-foreseen circumstances.



Grass leys sown with Lucern, Birds-foot trefoil and Timothy.

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